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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Title: ALLOY FOR BATTERY
GRIDS

Application No.: 09/696,109

Filing Date: 10/25/2000

Prior Application
No.: Continuation in part of
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28, 2000 which is a
continuation of
09/337,830 filed June
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Examiner: Tracy Mae Dove

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Assistant Commissioner for Patents
Washington, D.C. 20231

Application Serial No.: 09/696,109

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The accumulators require no maintenance, and will accept a deep charge in a very large number of charge/discharge cycles. The grids used in the accumulators contain by wt. 0.01-0.1% Ca, 0.01-0.2% Bi, 0.001-0.05% Ag, the remainder being lead.

The pref. alloy also contains max. 1.5% tin, and/or 50-500 g of aluminium per tonne. The alloy produces grids with good mechanical-, electrical-, and electrochemical-properties.

The alloy can be made from scrap lead so it is not necessary to use high purity prim. lead. The Al addn. minimises the loss of Ca from the alloy and improves its scratch resistance.

2. JP 54 058624 – an abstract in the English language as follows:

Abstract

The grid plate is made from a Pb alloy contg. Ca 0.05 – 0.1%, Sn 0.1 – 1.0% and Al 0.01 – 0.04%. The grid plate for automobile battery made from conventional Pb-Ca-Sn alloy has tensile strength > 400 Kg/cm² after ageing for > 400 hrs. This grid plate must be exposed to atmospheric air for > = 400 hrs. before subjecting to next surface treatment.

The new Pb-Ca-Sn-Al alloy has tensile strength > 400 Kg/cm² immediately after casting due to the rapid age hardening property. Thus, the surface treatment of the grid plate can be made successively to the casting. Ca and Sn in the alloy improve corrosion resistance.

3. JP 60 220561 – an abstract in the English language as follows:

Abstract

PURPOSE: To provide a lead-based alloy with sufficient mechanical strength suitable for a maintenance-free battery by molding the lead-based alloy taking, as a chief ingredient, Pb added with a little of at least Ca and Sn into a desired shape at temperature higher than a specified one, and thereafter subjecting it to an age hardening treatment.

CONSTITUTION: A lead-based alloy having Pb, as a main component, added with a little quantity of at least Ca and Sn is formed into a desired form at temperature over 50 deg.C, and thereafter subjected to an age hardening treatment. For a composition of respective components of said lead-based alloy, for example, Ca is made to range 0.02-0.15%, Sn 0.2-4.0%, and Pb the remaining fraction. Or, 0.03-1.5% Ag, 0.03-1.5% Cu, and 0.005-1.0% Al are preferably added singly or as a mixture of two kinds thereof or more. In addition, said age hardening treatment is preferably effected at temperature ranging about 50-170 deg.C.

Respectfully submitted,

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